

**UNITED STATES DISTRICT COURT  
FOR THE WESTERN DISTRICT OF TEXAS  
WACO DIVISION**

ECOFACITOR, INC.,  Plaintiff,  v.  GOOGLE LLC,  Defendant.	Civil Action No. 6:20-cv-00075 (ADA)  JURY TRIAL DEMANDED
ECOFACITOR, INC.,  Plaintiff,  v.  ECOBEE, INC.,  Defendant.	Civil Action No. 6:20-cv-00078-ADA  JURY TRIAL DEMANDED
ECOFACITOR, INC.,  Plaintiff,  v.  VIVINT, INC.,  Defendant.	Civil Action No. 6:20-cv-00080-ADA  JURY TRIAL DEMANDED

**DEFENDANTS' JOINT MOTION FOR SUMMARY JUDGMENT OF  
SUBJECT MATTER INELIGIBILITY UNDER 35 U.S.C. § 101**

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Defendants Google LLC, ecobee, Inc., and Vivint, Inc. move for summary judgment that the asserted claims of U.S. Patent Nos. 8,412,488 (“the ’488”), 8,738,327 (“the ’327”), and 10,534,382 (“the ’382”) are directed to patent-ineligible subject matter under 35 U.S.C. § 101.<sup>1</sup>

## **I. INTRODUCTION**

The three patents asserted by EcoFactor claim conventional implementations of abstract ideas that do not improve any HVAC or computer technology and are ineligible for patent protection under 35 U.S.C. § 101. As explained below—notwithstanding their use of technical jargon such as “processors,” “servers,” “network,” “circuitry,” “code,” “memory”—the claims of the asserted patents are directed to abstract ideas and indeed are, by a named inventor’s as well as an EcoFactor expert’s own admissions, activities that can be performed by the human mind. The claims recite mathematical ideas such as comparing inside and outside temperatures over time, and functional results such as determining whether an HVAC system is on or off (’488), changing thermostat settings to reduce electricity demand (’327), and controlling an HVAC system based on building occupancy (’382)—all without defining any concrete, technological improvements. These claimed ideas are all abstract and do not embody any inventive concept. The asserted claims therefore fail both steps of the eligibility test under *Alice Corp. Pty. v. CLS Bank Int’l*, 573 U.S. 208 (2014). Accordingly, Defendants respectfully request that the Court grant this motion for summary judgment under § 101 and Federal Rule of Civil Procedure 56(a).

## **II. STATEMENT OF UNDISPUTED MATERIAL FACTS**

### **A. Summary of the ’488 and ’327 patents**

1. The ’488 and ’327 patents are related—the latter being a “continuation” of the

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<sup>1</sup> This joint motion addresses all patent claims currently asserted by Plaintiff EcoFactor, Inc. against Google, a subset of which EcoFactor asserts against ecobee (claims from the ’327 and ’382), and a different subset of which EcoFactor asserts against Vivint (claims from the ’488).

former—and share the same specification and claim priority dating to provisional applications filed in August–September 2007.<sup>2</sup>

2. The '488 and '327 patents relate generally to HVAC systems and more particularly to the use of thermostats to verify that demand reduction has occurred. Ex. 1 at Abstract, 1:21-27. According to the patent specification, because HVAC systems can be a significant source of energy consumption, to reduce consumption during periods of peak demand, many utilities have programs whereby customers would agree to reduce usage during certain critical periods in exchange for incentives from the utility, like rebates. *See id.* at 1:57-64, 2:15-26. These financial incentives, however, create a risk of fraud that a customer might tamper with their HVAC system to avoid reducing usage during a peak demand period as they agreed to do, thus requiring the utility to monitor and verify compliance. *Id.* at 2:53-59.

3. The '488/'327 specification describes a method to verify compliance with such demand reduction programs by proposing a system that predicts how the indoor temperature measured inside a structure changes in response to outside temperature. Ex.1 at 3:25-4:13.

4. Under the proposed system, measurements for indoor and outdoor temperatures are compared over time to derive an estimation for the rate of change in inside temperature in response to an outside temperature. Ex. 1 at 7:48-54. The system then compares the estimation with an actual measurement to determine whether the HVAC system is on or off. *Id.* at 7:55-64.

5. The '488/'327 specification makes clear that at the time of the invention, only “conventional” components were necessary to practice the claimed inventions. *See, e.g.*, Ex. 1 at 5:19-46. In its “Detailed Description of Preferred Embodiments,” the specification discloses generic, routine, and/or well-known technology, including:

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<sup>2</sup> All citations herein to the common specification shared by the '488 and '327 patents will reference column and line numbers of the '488 patent unless otherwise indicated.

- the “World Wide Web” (*id.* at 5:1–2);
- “HTML” (*id.* at 5:5);
- “websites” (*id.* at 5:9–12);
- “local area networks, interactive television networks, telephone networks, wireless data systems, two-way cable systems, and the like” (*id.* at 5:16–18);
- “conventional computers” (*id.* at 5:20);
- “processors such as those sold by Intel and AMD” (*id.* at 5:22–23);
- “general-purpose processors, multi-chip processors, embedded processors and the like” (*id.* at 5:24–25);
- “handheld and wireless devices such as personal digital assistants (PDAs), cellular telephones and other devices capable of accessing the network” (*id.* at 5:26–28);
- “browser[s] configured to interact with the World Wide Web,” such as “Microsoft Explorer, Mozilla, Firefox, Opera or Safari” (*id.* at 5:29–31);
- “random access memory (RAM), electronically erasable programmable read only memory (EEPROM), read only memory (ROM), hard disk, floppy disk, CD-ROM, optical memory, or other method of storing data” (*id.* at 5:35–39);
- “operating system such as Microsoft Windows, Apple Mac OS, Linux, Unix or the like” (*id.* at 5:40–42); and
- “Ethernet, wireless protocols such as IEEE 802.11, IEEE 802.15.4, Bluetooth, or other wireless protocols” (*id.* at 6:24–26).

6. EcoFactor asserts independent claim 1 and dependent claims 2, 5, and 8 of the ’488 patent, and independent claim 1 and dependent claims 2, 5, and 8-10 of the ’327 patent.

7. Claim 1 of the ’488 patent recites the following functions of a “system for monitoring the operational status of an HVAC system” that comprises an “HVAC control system” and “one or more processors”:

- (a) receive temperature measurements from a structure conditioned by an HVAC system;
- (b) receive outside temperature measurements from a source other than the HVAC system;
- (c) compare the inside temperature of the structure and the outside temperature over time to derive an estimation for the rate of change in the inside temperature in response to

the outside temperature; and

- (d) compare a temperature recorded inside the structure with the estimation for the rate of change in inside temperature to determine whether the HVAC system is on or off.<sup>3</sup>

8. Similar to functions (a)-(c) of the '488 patent above, claim 1 of the '327 patent recites functions of a “system for controlling the operational status of an HVAC system” that comprises a “thermostat” in communication with “one or more servers” via a network:

- (a) receive temperature measurements from a structure conditioned by an HVAC system;
- (b) receive outside temperature measurements from a source other than the HVAC system;
- (c) compare the inside temperature of the structure and the outside temperature over time to derive an estimation for the rate of change in the inside temperature in response to the outside temperature.

Unlike the '488 patent, however, '327 claim 1 then does nothing with the derived estimation in function (c) above, but instead detours to the following functions:

- (d) receive a demand reduction request and determine whether the structure is associated with the request; and
- (e) if the structure is associated with the request, send a signal to the thermostat to change its setting to reduce electricity demand by the HVAC system.

9. The asserted dependent claims of the '488 and '327 patents recite:

- One or more processors ('488 patent) or servers ('327 patent) receive measurements of outside temperatures for geographic regions such as ZIP codes from sources other than said HVAC system. *See* Ex. 1, claim 2; Ex. 2, claim 2.
- An HVAC system that comprises a programmable thermostat that communicates with a mesh networking protocol. *See* Ex. 1, claim 5.
- The estimation in claim 1 is a prediction about the future rate of change in temperature

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<sup>3</sup> Google is concurrently moving for summary judgment of invalidity under 35 U.S.C. § 112 based on the claim language “compare an inside temperature recorded inside the first structure with said estimation for the rate of change in inside temperature.” That motion, however, does not impact the Court’s analysis here under § 101 and *Alice*. Under either of EcoFactor’s experts’ inconsistent interpretations—the interpretation of its infringement expert Mr. de la Iglesia that the claim language requires comparing a predicted rate of change with an actual rate of change, or the interpretation of its validity expert Dr. Palmer that the same language requires comparing a predicted inside temperature with an actual temperature—the asserted claims are directed to an abstract idea and do not contain an inventive concept.



inside said structure. *See* Ex. 1, claim 8; Ex. 2, claim 5.

- The second setting in claim 1 allows the inside temperature of the structure to increase to a certain temperature during a specified time interval. *See* Ex. 2, claim 8.
- The second setting in claim 1 is based on an agreement between a homeowner and a demand reduction aggregator. *See* Ex. 2, claim 9.
- The servers of claim 1 are further configured to send an alert to a user associated with the structure. *See* Ex. 2, claim 10.

10. The '488 and '327 patent claims above refer to physical componentry such as an HVAC system, processors, servers, and a programmable thermostat, but only recite such componentry in the context of performing the functions above.

#### **B. Summary of the '382 patent**

11. The '382 patent also relates generally to HVAC systems and how to achieve energy savings by turning them off when a building is unoccupied. Ex. 3 at Abstract, 1:17-25, 2:35-59. Although the prior art disclosed ways to accomplish such savings, the '382 patent purports to provide a system to detect occupancy “without requiring the installation of additional hardware” by observing activity on a user’s “computer or other consumer electronic devices.” *Id.* at 3:15-41. Such activity may indicate that the building is occupied and the temperature setpoint should be changed. *Id.* at Fig. 7, 7:13-26, 8:7-10.

12. Like the '488 and '327 patents, the claims of the '382 patent recite generic componentry like “HVAC system,” “memory,” “processors with circuitry and code,” “sensors,” and “network.” *See* Ex. 3, claims 1-20. The '382 specification makes clear that only conventional components were required to practice the claimed invention. *See, e.g., id.* at 4:63-64, 5:31-32. The specification’s “Detailed Description of Preferred Embodiments” discloses the same generic, routine, and/or well-known technology as listed in paragraph 5, *supra*. *See, e.g., id.* at 4:24-7:2.

13. EcoFactor asserts the following claims of the '382 patent, with the independent claims underlined: claims 1, 2, 6, 12, 15, 16, 17, and 19.

14. Claims 1 and 17 recite the following sequence of largely identical functions:

- (a) receive “first data” including a measured characteristic (claim 1) or current temperature (claim 17) of the building;
- (b) receive “second data” from outside the building (claim 1) or including the outdoor temperature (claim 17);
- (c) store historical values of the first and second data;
- (d) receive non-occupancy and occupancy temperature setpoints;
- (e) receive user commands regarding HVAC temperature setpoints;
- (f) send user-specific data about the building and HVAC system; and
- (g) control the HVAC system based on determining whether the building is occupied.<sup>4</sup>

15. The asserted dependent claims of the '382 patent add the following limitations:

- The operational temperature is the second temperature setpoint corresponding to non-occupancy when the system determines the building is unoccupied. *See* Ex. 3, claim 2.
- A user is queried to confirm whether to change to a different setpoint after determining whether the building is occupied. *See* Ex. 3, claim 6.
- Whether the building is occupied is determined by the first processor. *See* Ex. 3, claim 12.
- The interface allows the user to turn the HVAC system on or off. *See* Ex. 3, claim 15.
- The interface allows the user to input that the building is unoccupied. *See* Ex. 3, claim 16.
- The instructions to control the HVAC system to provide heating or cooling are based in part upon historical values of the first and second data in claim 1. *See* Ex. 3, claim 19.

**C. The asserted patents' use of conventional components and calculations**

16. The asserted patents acknowledge that the claimed inventions are carried out with

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<sup>4</sup> Claim 17 refers to receiving “third data” (not recited in claim 1) that informs whether the building is occupied.

“conventional” components. *See, e.g.*, Ex. 1 at 5:19-33, 5:51-53; Ex. 3 at 4:63-66, 5:31-33. Scott Hublou, a named inventor on the ’488 and ’327 patents, also confirmed that he did not invent any of the hardware components recited in the patents, including the HVAC unit, the thermostat, the gateway, the computer, the laptop, a network, a utility server, a database, the hardware behind the demand reduction service server, and the hardware behind a database connected to the demand reduction server. *See* Ex. 4 at 126:13-22, 136:1-138:1.

17. Mr. Hublou further confirmed that he could perform the “rate of change” calculation recited in the ’488 and ’327 patents “in his head.” Ex. 4 at 130:18-131:3. EcoFactor’s validity expert, John Palmer, likewise confirmed that the “rate of change” calculation being described in the ’488 and ’327 patent claims would be the equivalent of the slope between two different points on a graph. *See* Ex. 5 at 81:19-82:16 (“if you have a graph, then . . . a typical way of determining the slope of that graph is by looking at the temperature difference between two points divided by the time difference between the two points”), 93:12-17.

18. EcoFactor’s infringement expert, Erik de la Iglesia, described the material in column 7 of the ’488 and ’327 patents as being an application of Newton’s law of heating and cooling. *See* Ex. 6 at 78:18-20. As described by Mr. de la Iglesia in his expert report, “Newton’s laws of heating and cooling[] dat[e] back to approximately the year 1700” and “describe the rate of change of temperature as a function of time as being proportional to the difference between an object’s temperature and the temperature of its surroundings.” *See* Ex. 7 at 14. He goes on to say that Newton’s law “can easily be modified” to add “a heating or cooling device such as an HVAC system.” *Id.* at 15.

19. Mr. Hublou also confirmed that the data and calculations in the provisional

applications to which the asserted patents claim priority involved “rudimentary math on Excel spreadsheets and graphing.” Ex. 4 at 158:19-25. *See also id.* at 169:121-23 (Mr. Hublou tested his hypotheses using “Excel spreadsheets” and “crude types of calculations and graphing abilities”). Mr. Hublou collected the data that formed the basis of the provisional applications from thermostats at the houses of his friends and family and then used Excel to generate hand-drawn graphs that formed the basis of the patent figures. *See* Ex. 4 at 172:4-21, 173:13-174:9.

20. Mr. Palmer confirmed that a human could “sit there with a pencil and paper and write down a whole bunch of temperatures and times” and “then tak[e] that data and analyz[e] it” to “compar[e] inside and outside temperatures over time and develop[] from that an estimated rate of change,” as recited by the claims of the ’488 and ’327 patents. *See* Ex. 5 at 93:1-9, 94:7-15 (“[W]ould it be theoretically possible for a person to collect a large amount of data? Yes. Would it be theoretically possible without any computational aid for that person to evaluate that large quantity of data in such a way as to provide a reasonable estimate of the rate of change over time in the context of a particular set of conditions? . . . [T]here are a few people that could.”).

### **III. STATEMENT OF DISPUTED ISSUES TO BE DECIDED**

Whether claims 1, 2, 5, and 8 of the ’488 patent, claims 1, 2, 5, 8, 9, and 10 of the ’327 patent, and claims 1, 2, 6, 12, 15, 16, 17 and 19 of the ’382 patent are invalid as directed to patent-ineligible subject matter under 35 U.S.C. § 101.

### **IV. LEGAL STANDARD**

“Laws of nature, natural phenomena, and abstract ideas are not patentable” under 35 U.S.C. § 101. *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 573 U.S. 208, 216 (2014). Under the two-step framework for determining invalidity under § 101 set out by the Supreme Court in *Alice*, the court must first determine whether a claim is “directed to” a patent ineligible abstract idea. *Id.* at 217. If a claim is directed to an abstract idea, the court then considers the elements of each claim

individually and “as an ordered combination” to determine whether the additional elements “transform the nature of the claim” into a patent-eligible application. *Id.* Patent eligibility under § 101 is an issue of law. While the legal determination in *Alice* step two may contain underlying factual issues, where, as here, there are no material factual disputes, summary judgment should be granted. *Am. Axle & Mfg., Inc. v. Neapco Holdings LLC*, 967 F.3d 1285, 1299 (Fed. Cir. 2020) (finding “no dispute of any material fact” and granting summary judgment that the asserted claims are not patent eligible). Summary judgment should be granted “if the movant shows that there is no genuine dispute as to any material fact and the movant is entitled to judgment as a matter of law.” Fed. R. Civ. P. 56(a).

## V. ARGUMENT

### A. All asserted claims of the ’488 patent are patent ineligible.

#### 1. **Alice Step One: the ’488 claims are directed to the abstract idea of determining whether the HVAC system for a structure is on or off by comparing the actual inside temperature with a predicted estimation.**

Though the asserted claims of the ’488 patent contain many words, stripped of excess verbiage, they express nothing more than the idea of using changes in indoor temperature in response to outdoor temperature to determine whether an HVAC system is on or off. But human beings have determined whether their HVAC system is on or off for years, which can be done through the process of mental deduction—noting the desired temperature setting on the device, noting the outdoor and actual indoor temperatures, noting the rate at which the home is heating or cooling, and concluding that the HVAC system was not actually on or off based on the disparity between expected and actual indoor temperatures. And, according to EcoFactor’s own expert, the relationship between indoor and outdoor temperature and using that to calculate a rate of change in indoor temperature is something that humans have been calculating since at least the early 1700s, when Newton first published his law of heating and cooling. *See* Ex. 7 at 14.

Independent claim 1 recites four simple functions, as set forth in Fact 7 above. *See* Ex. 1, claim 1. None of the asserted dependent claims (which depend from claim 1) add anything substantive to the four core functions recited above. Instead, they only recite generic components used in conventional ways. *See, e.g.*, Ex. 1, claim 2 (the outside temperature measurements are for particular geographic regions); claim 5 (the HVAC system includes a programmable thermostat that communicates with a mesh networking protocol); claim 8 (the estimation of the rate of change is a prediction of future change in inside temperature).

Thus, the “character” of the claims as a whole is directed to the abstract idea of using temperature changes to determine whether an HVAC system is on or off. All four of the claimed essential functions—taking indoor and outdoor temperature measurements, calculating the rate of change of indoor temperature and comparing that to the predicted indoor temperature, and using that to determine whether an HVAC system is on or off—can be performed by a human doing computations—i.e., the original computer. *Bancorp Servs., LLC v. Sun Life Assurance Co. of Canada (U.S.)*, 687 F.3d 1266, 1277-78 (Fed. Cir. 2012). One of the patent’s inventors and EcoFactor’s own expert have admitted as much. *See* Ex. 4 at 130:18-131:3 (admitted he could perform the calculations recited in the patent claims “inside [his] head”); *id.* at 158:19-25 (data and calculations that led to the provisional applications to which the asserted patents claim priority involved “rudimentary math on Excel spreadsheets and graphing”); *id.* at 172:4-21, 173:13-174:9 (collected data from thermostats in houses of friends and family and then used Excel to generate hand-drawn graphs that formed the basis of the patent figures); Ex. 5 at 93:1-9; 94:7-15 (admitting that humans could carry out the steps and calculations required by the patent claims).

Further reinforcing their abstractness, the asserted claims recite only aspirational results

without explaining “*how?*”. Claim 1 contains no instructions for how the general-purpose computer is to perform the “estimation of the rate of change” calculation; the computer or the human mind can do this according to any algorithm or formula or consideration or deduction based on personal observation. The patent’s lack of algorithmic disclosure was confirmed by one of the inventors. Ex. 4 at 118:3-8. The claims are like those held invalid in *Clairilogic, Inc. v. FormFree Holdings Corp.*, 681 F. App’x 950 (Fed. Cir. 2017), which required collecting data and then validating data “by applying an algorithm engine.” *Id.* at 952. They were directed to an abstract idea because the “the algorithm engine mentioned in the claim is not claimed, identified, or explained.” *Id.* at 954.

EcoFactor might contend that the claimed invention calculates the rate of change in indoor temperature in response to outdoor temperature to determine whether the HVAC system is on or off. But this further confirms the claims’ abstract nature. Adding a law of nature, like Newton’s law of heating and cooling, to an abstract idea “does not render the claim non-abstract.” *See RecogniCorp, LLC v. Nintendo Co., Ltd.*, 855 F.3d 1322, 1327 (Fed. Cir. 2017). Where “a claim is directed essentially to a method of calculating, using a mathematical formula, even if the solution is for a specific purpose, the claimed method is nonstatutory.” *Parker v. Flook*, 437 U.S. 584, 595 (1978).

Or EcoFactor might argue that the idea embodied by the ’488 claims is, per the patent specification, to “use [a] communicating thermostat combined with a computer network to verify that demand reduction has occurred.” Ex. 1 at 1:25-27. But despite the patent specification’s description of various existing utility demand reduction programs, the ’488 claims do not recite demand reduction requests or verification. *Compare* Ex. 1 at 1:20-3:21 *with* ’488 claim 1. Even taking the specification’s description of the invention at face value, the idea of coupling a

thermostat to a computer network, without reciting any improvements to either the thermostat or the computer network, is an abstract idea, like the one the Federal Circuit held invalid in *ChargePoint, Inc. v. SemaConnect, Inc.*, 920 F.3d 759, 769 (Fed. Cir. 2019) (finding claimed invention to be “nothing more than the abstract idea of communication over a network for interacting with a device, applied in the context of electric vehicle charging stations”).

Nor do the claims recite any “specific means or method that improves” upon the hardware used to implement the process described in the claim. *McRO, Inc. v. Bandai Namco Games Am. Inc.*, 837 F.3d 1299, 1314 (Fed. Cir. 2016). Instead, they focus on “a process that qualifies as an ‘abstract idea’ for which computers are invoked merely as a tool.” *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1335-36 (Fed. Cir. 2016). In fact, the patent specification makes clear that all mechanical and electronic componentry necessary to practice the asserted claims—like the HVAC system, processors, programmable thermostat, and mesh networking protocol—are “conventional.” *See, e.g.*, Ex. 1 at 5:19-46. This also was confirmed by one of the named inventors, who admitted that he did not invent any of the hardware components claimed in the patent. *See* Fact 16 above.

The fact that the claim recites physical components, such as an HVAC unit or a thermostat, “is not enough to save the claims from abstractness, where the claimed advance is directed to . . . using off-the-shelf technology for its intended purpose.” *Chamberlain Group, Inc. v. Techtronic Indus. Co.*, 935 F.3d 1341, 1348 (Fed. Cir. 2019). *See also* *CardioNet, LLC v. InfoBionic, Inc.*, 816 F. Appx. 471, 476 (Fed. Cir. 2020) (affirming ineligibility under § 101, in part because “the claims depend on methods that can be performed . . . without reciting . . . any nonconventional components or characteristics”). The claims are not “‘directed to a specific implementation of a solution to a problem in the software arts,’ such as an improvement in the



functioning of a computer.” *RecogniCorp.*, 855 F.3d at 1326 (quoting *Enfish*, 822 F.3d at 1338-39). As a result, the claims fail *Alice* step one.

**2. Alice Step Two: the ’488 claims do not contain an inventive concept.**

To save otherwise abstract claims at step 2, “an inventive concept must be evident in the claims,” *RecogniCorp.*, 855 F.3d at 1327, and must provide “significantly more” than the “ineligible concept itself,” *BSG Tech LLC v. Buyseasons, Inc.*, 899 F.3d 1281, 1289–90 (Fed. Cir. 2018). The asserted ’488 claims, however, involve no more than the performance of “well-understood, routine, and conventional activities,” and thus lack an inventive concept. *Content Extraction & Transmission LLC v. Wells Fargo Bank, N.A.*, 776 F.3d 1343, 1347–48 (Fed. Cir. 2014).

Instead of disclosing “a specific technical solution,” the ’488 asserted claims “simply us[e] generic computer concepts in a conventional way,” *Bascom Glob. Internet Servs., Inc. v. AT&T Mobility LLC*, 827 F.3d 1341, 1352 (Fed. Cir. 2016), and thus do not “transform the claimed abstract idea into a patent-eligible application,” regardless of whether the steps are considered “individually” or “as an ordered combination,” *OIP Tech., Inc. v. Amazon.com, Inc.*, 788 F.3d 1359, 1363 (Fed. Cir. 2015). The asserted independent claims use a processor or HVAC system to perform conventional functions that any computer or generic piece of hardware might perform, *e.g.*, recording various temperature values and calculating a rate of change in such values. Ex. 1 at 9:25-45. Nothing in the claims requires any specific new computer or concrete technology to achieve these results.

In fact, rather than providing any novel technical solution, the ’488 patent makes clear that these electrical and mechanical components are being used in conventional ways. *See, e.g.*, Ex. 1 at 5:19-33 (“[i]n one embodiment, computers [] and servers [] are conventional computers”

that include “processors such as those sold by Intel and AMD”), 5:51-53 (“The HVAC units may be conventional air conditioners”). Additionally, one of the patent inventors disavowed having made any inventive contribution to such components, thereby confirming their conventional nature. Ex. 4 at 126:13-22; 136:1-138:1.

By only reciting generic components performing conventional functions, the claims fail to specify *how* any of claimed elements, such as the processor, programmable thermostat, or HVAC system, actually achieve the desired results. Instead, the claims use only “generic functional language to achieve the[] purported solutions.” *Two-Way Media Ltd. v. Comcast Cable Commc’ns, LLC*, 874 F.3d 1329, 1339 (Fed. Cir. 2017). Here, “[n]othing in the claims . . . requires anything other than conventional computer and network components operating according to their ordinary functions,” and thus they fail to pass muster at *Alice* step two. *Id.* See also *In re TLI Commc’ns Patent Litig.*, 823 F.3d 607, 615 (Fed. Cir. 2016) (claims ineligible where “the recited physical components behave exactly as expected according to their ordinary use”).

**B. All asserted claims of the ’327 patent are patent ineligible.<sup>5</sup>**

**1. Alice Step One: the ’327 claims are directed to the abstract idea of changing the thermostat setting in response to a request to reduce energy usage.**

The asserted claims of the ’327 patent recite functions that reflect nothing more than the abstract idea of telling the thermostat to turn off the HVAC system in response to a request from a utility to reduce energy usage. After removing extraneous verbiage,<sup>6</sup> independent claim 1 of

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<sup>5</sup> As discussed above, the ’488 and ’327 patents share a specification and have many overlapping claim elements. To the extent that the claim elements are overlapping, the arguments above with respect to the ’488 patent are incorporated by reference here. Defendants will only separately address in this section the ’327 claim elements that differ from those of the ’488 patent.

<sup>6</sup> The first several limitations of ’327 claim 1 track those of ’488 claim 1. But then ’327 claim 1 proceeds to recite limitations relating to demand reduction request verification that diverge from

the '327 patent recites the following functional sequence: (1) receiving a request from a utility to reduce energy usage, (2) determining whether that home is participating in the demand reduction program, and (3) if so, responding to that request by sending a signal to change the thermostat setting. As explained above, these functions of coupling a thermostat with a computer network to receive and verify demand reduction requests is similar to the abstract idea in *ChargePoint* of “communication over a network for interacting with a device,” applied to the context of HVAC systems. *See id.*, 920 F.3d at 768.

Similarly, the '327 dependent claims do not substantively add to these core functions. Instead, they recite generic components used in a conventional manner, like servers receiving outside temperatures for geographic zones (claim 2) or servers configured to send an alert to the home's owner or occupant (claim 10). The claims do not define any technological improvements upon such components, but merely recite the functions they must carry out. *See, e.g.*, Ex. 2 at 5:19-46 (referring to “conventional” computer and HVAC equipment). *See also* Ex. 4 at 126:13-22; 136:1-138:1.

Like those of the '488 patent, all of the essential functions of the '327 asserted claims can be performed by humans. In fact, the demand reduction verification recited in '327 claim 1 does not rely on any computations or calculations at all. It simply requires receiving a request, checking that request against a list of participating structures, and then acting on the request by sending a signal to change the thermostat setting of any participating structure. Devoid of any claim limitations on how the enumerated functions are carried out, the claim language would cover any thermostat communicating over a computer network with a utility about demand reduction requests, “thus preempting the entire industry's ability to use” computer-connected

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<sup>1</sup>'488 claim 1 and that seem unrelated to the preceding limitations.

thermostats to help utilities reduce power consumption at peak times. *See ChargePoint*, 920 F.3d at 770. For these reasons, these claims are abstract and therefore fail *Alice* step one.

**2. Alice Step Two: the '327 claims do not contain an inventive concept.**

The claims of the '327 patent likewise fail *Alice* step two because they lack an inventive concept; they merely provide a “wholly generic computer implementation,” *Alice*, 573 U.S. at 223, and recite nothing more than the ineligible concept itself. *Buyseasons*, 899 F.3d at 1289-90. Like the '488 claims discussed in section V.A.2 *supra*, the '327 claims merely recite generic components—like an HVAC system, thermostat, and servers—performing conventional functions. *See, e.g.*, Ex. 2 at 5:19-33, 5:51-53; Ex. 4 at 126:13-22, 136:1-138:1. The claims use generic components in a conventional way and do not transform the abstract idea into a patent-eligible concept. And, as admitted in the patent specification, the functions of receiving a demand reduction request and reacting to the receipt of a demand reduction request from a utility were also familiar concepts. *See, e.g.*, Ex. 2 at 2:15-3:17. Accordingly, they cannot provide the necessary inventive concept.

Moreover, the '327 claims do not recite the method by which the demand reduction is performed. They describe only a result, by claiming generic servers that are “configured” to receive a demand reduction request, “determine” whether the structure is participating in a demand reduction program, and then “send a signal” to the thermostat to change the HVAC setting if so. Nothing in the claims explains how any of this is to be done, and thus, the claimed method is not inventive. *See Apple, Inc. v. Ameranth, Inc.*, 842 F.3d 1229, 1244 (Fed. Cir. 2016) (“a claim that merely describes an ‘effect or result dissociated from any method by which [it] is accomplished’ is not directed to patent-eligible subject matter”).

**C. All asserted claims of the '382 patent are patent ineligible.**

**1. Alice Step One: the '382 claims are directed to the abstract idea of changing the thermostat setting based on a building's occupancy.**

The asserted claims of the '382 patent are directed to the abstract idea of changing the temperature setpoint on a thermostat based on whether a building is occupied. When stripped of extraneous verbiage, the independent claims ('382 claims 1, 17) each recite the following sequence of identical steps or functions: (a) receive “first data” including a measured characteristic (claim 1) or current temperature (claim 17) of the building; (b) receive “second data” from outside the building (claim 1) or including the outdoor temperature (claim 17); (c) store historical values of the first and second data; (d) receive non-occupancy and occupancy temperature setpoints; (e) receive user commands regarding HVAC temperature setpoints; (f) send user-specific data about the building and HVAC system; and (g) control the HVAC system based on determining whether the building is occupied.

The asserted dependent claims do not add anything substantive to the core idea above, reciting only generic components used in ways that would be ordinarily understood by one of skill in the art. For example, claim 2 describes setting a different temperature setpoint if the building is unoccupied, claim 6 describes sending a query to a user to confirm a change in temperature in response to an occupancy determination, claim 15 describes an interface configured to allow a user to turn the HVAC system on or off or, as in claim 16, to allow the user to input that the building is currently unoccupied, and claim 19 allows the processors controlling the HVAC system to set the operational temperature based on historical values.

These claims are directed to the same core, abstract idea of changing the temperature setpoint of a building based on a determination of occupancy in which “computers are invoked merely as a tool.” *Enfish*, 822 F.3d at 1335-36. The claims recite conventional mechanical and

electronic componentry, such as an HVAC system, memory, processors with circuitry and code, sensors, and a network. The patent admits that at the time of the invention, only “conventional” components were necessary to practice the asserted claims. *See, e.g.*, Ex. 3 at 4:38-5:25.

In addition to being directed to an abstract idea in which conventional computers and electrical components are being invoked merely as tools, all of the ’382 patent’s essential functions can be performed by a human. The crux of the ’382 claims is changing the thermostat setting based on a building’s deemed occupancy. But determining whether a person is in a particular structure, and then turning the dial on the thermostat, is a function that people have been performing for as long as they have had thermostats. It is common practice, for example, for a family prior to going on vacation, knowing their home will be unoccupied for a long period of time, to turn down the temperature on the thermostat in the colder months or up in the warmer months to save electricity. Automating this manual activity using generic components does not make the ’382 patent claims any less abstract. *See Chamberlain Group*, 935 F.3d at 1348 (“the mere physical nature of [the] claim elements . . . is not enough to save the claims from abstractness, where the claimed advance is directed to the wireless communication of status information using off-the-shelf technology for its intended purpose”).

Further, independent claim 1 contains no instructions for how the general-purpose computer is to “execute instructions” with respect to changing the temperature based on an occupancy determination; the computer or the human mind can do this according to any algorithm or formula or consideration. The patent discloses no formula or consideration for how this is to be done. *See Two-Way Media*, 874 F.3d at 1337. At their core, these claims are like those held invalid in *Clairilogic*, which were directed to an abstract idea because “the algorithm engine mentioned in the claim is not claimed, identified, or explained.” 681 F. Appx. at 954.

“[A] method for collection, analysis, and generation of information reports, where the claims are not limited to how the collected information is analyzed or reformed, is the height of abstraction.” *Id.* Here, reciting a litany of limitations in which a processor is “designed to execute instructions” regarding occupancy, without even purporting to define those instructions, is the very definition of abstract under *Alice* step one.

**2. Alice Step Two: the ’382 claims do not contain an inventive concept.**

The otherwise abstract claims of the ’382 patent can only be saved if there is “an inventive concept [] evident in the claims,” *RecogniCorp*, 855 F.3d at 1327, which must provide “significantly more” than the “ineligible concept itself.” *Buyseasons*, 899 F.3d at 1289-90. The ’382 claims’ “wholly generic computer implementation,” *Alice*, 573 U.S. at 223, does not supply the inventive concept necessary to pass muster under *Alice* step two.

Nothing in the claims defines any technical improvement upon existing HVAC systems, memory, processors, sensors, or networks, notwithstanding their recitation of such terms. And, as with the ’488 and ’327 patents, the ’382 specification confirms that the named inventors did not contemplate anything beyond the conventional. The specification does no more than describe a litany of generic, routine, and/or well-known technology. *See, e.g.*, Ex. 3 at 4:45-49 (the “World Wide Web”); 4:64-66 (“conventional computers that are equipped with communications hardware such as modem or a network interface card”); 4:66-67, 5:1-2 (“general-purpose processors” like “those sold by Intel and AMD”); and 5:10-12 (“browser[s] configured to interact with the World Wide Web,” such as “Microsoft Explorer, Mozilla, Firefox, Opera or Safari”). Even the HVAC-specific aspects of the claimed invention are conventional. *See, e.g.*, Ex. 3 at 5:31-33 (“HVAC units may be conventional air conditioners, heat pumps, or other devices for transferring heat into or out of a building”); 5:54-58 (thermostat includes a “temperature sensing means [], which may be a thermistor, thermal diode or other

means commonly used in the design of electronic thermostats”).

There is nothing in either the claims or specification of the ’382 patent besides “generic functional language to achieve the[] purported solutions.” *Two-Way Media*, 874 F.3d at 1339. Without any purported improvement on existing computer hardware upon which the claimed inventions are implemented, the inquiry under *Alice* step two “therefore must turn to any requirements for *how* the desired result is achieved.” *Id.* Because there is nothing in the claims that “requires anything other than conventional computer and network components operating according to their ordinary functions,” the asserted claims of the ’382 patent do not contain an inventive concept and therefore fail *Alice* step two. *Id.*

## VI. CONCLUSION

For the foregoing reasons, summary judgment of invalidity under 35 U.S.C. § 101 should be granted for the asserted claims of the ’488, ’327, and ’382 patents.



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